

REMARKS / ARGUMENTS

The Advisory Action dated December 17, 2009, has been carefully reviewed and the following remarks are responsive thereto.

Claims 1-4, 7-10, 19-20 and 23-24 have been amended. From "Fig.4B shows the smart antenna digital fixed beam-forming device used in CDMA system, which comprises a base band system 300, a digital fixed beam-forming network 470, an optical transceiver system..." (please refer to page 21, lines 23-27 of the specification of the present invention), no new matter has been added.

Claims 1-26 remain pending upon entry of the present amendment. Reconsideration and allowance are respectfully requested.

Claim Rejections - 35 U.S.C.§103

Claims 1-11, 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoppenstein (US 2004/0204109 A1) in view of Frank et al. (US 2004/0127174 A1). This rejection is respectfully traversed for at least the following reasons.

Claim 1:

Claim 1 has been amended by adding "said base band system including at least one base band chip, the at least one base band chip having a plurality of sectors" and changing "different beams are made to have different time delays in the base band system" to "different beams are reflected to the sectors of the at least one base band chip to have different time delays in the base band system". From claim 12 of the present invention, it can be seen that no new matter is added.

By the present amendment, claim 1 recites a device for realizing beam-forming in CDMA system:

said device comprising in a forward signal flow, at least a base band system, an

optical transceiver system, a transceiver system, an analog fixed beam-forming network, a power amplifier, a transmission filter at a radio frequency front end, and an antenna system;

said device comprising in a reverse signal flow, at least the antenna system, a reception filter at a radio frequency front end, a low noise amplifier, the analog fixed beam-forming network, the transceiver system, the optical transceiver system and the base band system;

said base band system including at least one base band chip, the at least one base band chip having a plurality of sectors;

the optical transceiver system comprising an optical fiber and an optical interface board close to the base band system and an optical interface board close to the transceiver system, and enabling the base band system be placed in a warehouse so as to make the base band system support the plurality of sectors, and a radio frequency part close to the antenna, thereby reducing power loss;

said optical interface board being used to interconvert electronic signals and optical signals input;

when transmitting forward signals, different beams are reflected to the sectors of the at least one base band chip to have different time delays in the base band system so that they are not coherent with one another even when different beams carry same information.

Neither Hoppenstein nor Frank, either separately or in combination, teaches or suggests such technical features.

Firstly, for example, claim 1 recites that "said base band system including at least one base band chip, the at least one base band chip having a plurality of sectors". Frank does not teach or suggest this technical feature. Paragraph [0029] of Frank discloses "the described technology was illustrated with 3 sectors and 4 beams per sector, which is typical. It will be understood by those of average skill in the art that this technique applies for fewer or more sectors as well as fewer or more beams per sector." However, Frank does not teach or suggest that the "sector" is in the "chip". Paragraph

[0019] of Frank discloses "FIG. 1 illustrates a wireless cell layout 20 containing 15 cells, of which a cell 30 is outlined in bold. Each cell is divided into **three equal sectors** by dashed lines at 120° from each other." It can be seen that the "**sector**" means a region corresponding to antenna coverage. While in claim 1 of the present invention, the "sectors" is in the "chip", the "sector" is "the corresponding sectors in the base band chips, herein is the area covered by the narrow beams, such as 222, 224, 226 shown in fig. 2" (please refer to page 20, lines 14-16 of the specification of the present invention). The "**sector**" disclosed by Frank is not the same with the "sector" in claim 1 of the present invention. Therefore, the "sectors" in claim 1 of the present invention is not taught or suggested by Frank.

Paragraph [0029] of Frank discloses "The typical time offsets, for the system illustrated in FIG.4, will be in the range of 1 to 10 chips". However, Frank does not teach or suggest the "chip" is the "base band chip" which has a plurality of "sectors". Paragraph [0029] of Frank discloses "the chip rate of the system is 1.2288 megachips per second, and thus a chip corresponds to 81.38 microseconds". It can be seen that the "**chip**" means a combination of several code words. While in claim 1 of the present invention, the "chip" is a "base band chip"; the "chip" is hardware, which has a plurality of "sectors" (please refer to page 17, lines 16-19 of the specification and FIG. 3 of the present invention). The "**chip**" disclosed by Frank is not the same with the "chip" in claim 1 of the present invention. Therefore, the "chip" in claim 1 of the present invention is not taught or suggested by Frank.

Secondly, claim 1 recites "different beams are reflected to the sectors of the at least one base band chip to have different time delays in the base band system". Frank does not teach or suggest this technical feature. Paragraph [0025] of Frank discloses "The signal on these line feeds 41-44 are each modified by a corresponding time delay circuitry 45-48 prior to being fed into beam source 49". However the "**time delay circuitry**" in Frank is not the same with the "base band chip" in claim 1 of the present invention. In claim 1 of the present invention, the "base band chip" has a plurality of sectors; and different beams are reflected the sectors of the at least one base band

chip. The “**time delay circuitry**” in Frank **does not** have a plurality of sectors, thus the “**time delay circuitry**” in Frank **does not** have a same structure as the “base band chip” in claim 1 of the present invention. Therefore, the “base band chip” in claim 1 of the present invention is not taught or suggested by Frank.

The above distinguishing technical features are not disclosed by Hoppenstein.

The distinguishing technical features recited in claim 1 of the present invention can realize the technical effects of “the smart antenna technique is used to form multiple fixed beams in a sector in CDMA system, and multiple fixed beams are used in the same smart antenna system to form traffic channels with narrow beams and common channels with sector beams simultaneously” (Please refer to page 5, lines 1-5 of the specification of the present invention). Thus, the problem of phrase inconsistency of each channel is solved by the technical scheme defined in claim 1 of the present invention.

Further, the prior art, as a whole, does not suggest or teach the above distinguishing technical features. Applicants respectfully submit that the prior art does not provide any relative teachings for one of ordinary skill in the art to acquire the technical scheme defined in claim 1 over Frank and Hoppenstein with a combination of the above distinguishing technical features and further solves the technical problem to be solved in the present invention. The applicants respectfully submit that it is non-obvious for one of ordinary skill in the art at the time of the invention to modify Frank and Hoppenstein by the existing technology in the prior art, to solve the problem to be solved in the present invention. Accordingly, claim 1 also conforms to the provisions of 35 U.S.C. 103.

As such, the applicants respectfully submit that claim 1 is in condition for allowance.

Claims 3-6 and 19-22:

Claims 3-6 and 19-22 are dependent on claim 1 directly or indirectly, and are thus allowable for at least the same reasons as claim 1.

Claim 7:

Claim 7 has been amended by adding "said base band system including at least one base band chip, the at least one base band chip having a plurality of sectors" and changing "different beams are made to have different time delays in the base band system" to "different beams are reflected to the sectors of the at least one base band chip to have different time delays in the base band system". From claim 12 of the present invention, it can be seen that no new matter is added.

By the present amendment, claim 7 recites a device for realizing beam-forming in CDMA system:

Claim 7 recites a device for realizing beam-forming in CDMA system,
said device comprising in a forward signal flow at least a base band system, a digital fixed beam-forming network, an optical transceiver system, a transceiver system, a power amplifier, a transmission filter of radio frequency front end and an antenna system;

said device comprising in a reverse signal flow at least the antenna system, a reception filter of radio frequency front end, a low noise amplifier, the transceiver system, the optical transceiver system, the digital fixed beam-forming network, and the base band system;

said base band system including at least one base band chip, the at least one base band chip having a plurality of sectors;

said optical transceiver system comprising an optical fiber, an optical interface board close to the base band system and an optical interface board close to the transceiver system, and enabling the base band system be placed in a warehouse so as to make the base band system support the plurality of sectors, and a radio frequency part close to the antenna, thereby reducing the power loss;

said optical interface board being used to interconvert electronic signals and optical signals input;

when transmitting forward signals, different beams are reflected to the sectors of the

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at least one base band chip to have different time delays in the base band system so that they are not coherent with one another even when the different beams carry same information.

Claim 7 comprises all the distinguishing technical features recited in claim 1. As stated above, claim 1 conforms to the provisions of 35 U.S.C. 103; claim 7 also conforms to the provisions of 35 U.S.C. 103 for at least the same reason as claim 1.

As such, the applicants respectfully submit that claim 7 is in condition for allowance.

Claims 9-11 and 23-25:

Claims 9-11 and 23-25 depend on claim 7 directly or indirectly, and are thus allowable for at least the same reasons as claim 7.

Claim Rejections - 35 U.S.C. §102

Claims 12-18 and 26 stand rejected under 35 U.S.C. 102(e) as being anticipated by Frank. This rejection is respectfully traversed for at least the following reasons.

Claim 12:

Claim 12 recited a method for realizing beam-forming in CDMA system, at least comprising the following steps of:

step one: in a base band, reflecting base band signals of each fixed beam to sectors of base band chips;

step two: making the base band signals of the fixed beams reflected to corresponding sectors of the base band chips have different time delays.

Claim 12 comprises all the technical features recited in claim 1. As stated above, claim 1 is in condition for allowance, claim 12 is also in condition for allowance for at least the same reason as claim 1.

As such, the applicants respectfully submit that claim 12 is in condition for allowance.

Claims 13-15

Claims 13-15 of the present invention is dependent claims of independent claim 12, and further define additional technical features.

By these additional technical features, for "traffic channel" and "common channel", different solutions for reflecting to sectors of the at least one base band chip can be used; when transmitting "within certain fixed beam where the user locates" and "if the user locates among several beams", different solutions for reflecting to sectors of the at least one base band chip can be used. Thus, the technical schemes defined in claims 13-15 are applicable for various signal transmitting. The method disclosed in Frank can not achieve such technical effects.

Thus, Frank does not disclose the additional technical features defined in claims 13-15.

In addition, claims 13-15 depend on claim 12, and are thus allowable for at least the same reasons as claim 12.

Claims 16-18 and 26:

Claims 16-18 and 26 depend on claim 12 directly or indirectly, and are thus allowable for at least the same reasons as claim 12.

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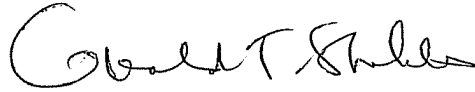
Applicant hereby requests reconsideration and reexamination thereof.

No further fee or petition is believed to be necessary. However, should any further fee be needed, please charge our Deposit Account No. 23-0920, and deem this paper to be the required petition.

With the above amendments and remarks, this application is considered ready for allowance and applicant earnestly solicits an early notice of same. Should the Examiner be of the opinion that a telephone conference would expedite prosecution of the subject application, he/she is respectfully requested to call the undersigned at the below listed number.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read "Gerald T. Shekleton". The signature is fluid and cursive, with the first name "Gerald" being more prominent.

Dated: 27 January

Gerald T Shekleton

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